

## Patent Abstracts of Japan

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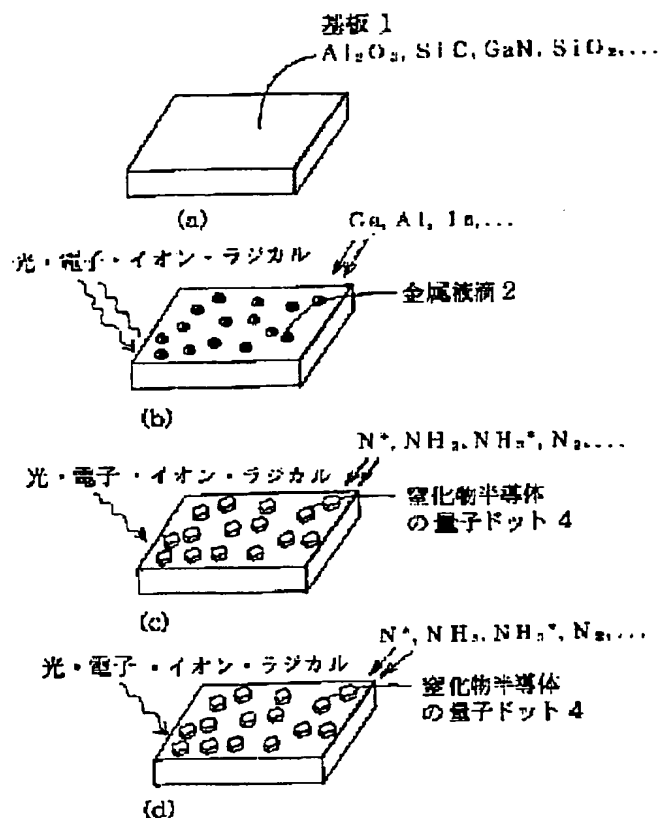
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APPLICANT : INST OF PHYSICAL & CHEMICAL RES;

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TITLE : FORMATION METHOD OF  
 POSITION-CONTROLLED QUANTUM  
 DOT OF NITRIDE SEMICONDUCTOR  
 IN DROPLET EPITAXY, QUANTUM BIT  
 ELEMENT STRUCTURE IN QUANTUM  
 COMPUTER AND QUANTUM  
 CORRELATION GATE ELEMENT  
 STRUCTURE



ABSTRACT : PROBLEM TO BE SOLVED: To form a quantum dot of a nitride semiconductor such as GaN, InN, or AlN, InGaN, AlGaIn, etc., while controlling its position.

SOLUTION: A method for forming a position-controlled quantum dot of a nitride semiconductor in droplet epitaxy is provided with a first process, where by applying an external field to a surface of a substrate 1 that has surface energy lower than that of metal raw material, the surface condition of the substrate is modulated to modify the surface, a second process where the metal raw material is supplied to the substrate whose surface is modified in the first process to form a metal droplet 2 on the place whose surface is modified in crystal growth, and a third process, wherein by supplying nitrogen source onto the substrate on which the metal droplet 2 is formed in the second process, the metal droplet is nitrided to form the quantum dot 4 of the nitride semiconductor.

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